FUEL CELL HOUSING CASE

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Applicant: TOYOTA MOTOR CORP

Classification:

- international: ***H01M8/24; H01M8/04; H01M8/10;*** *H01M8/10;* **H01M8/24; H01M8/04; H01M8/10;** H01M8/10; (IPC1-7): H01M8/10; H01M8/04; H01M8/24

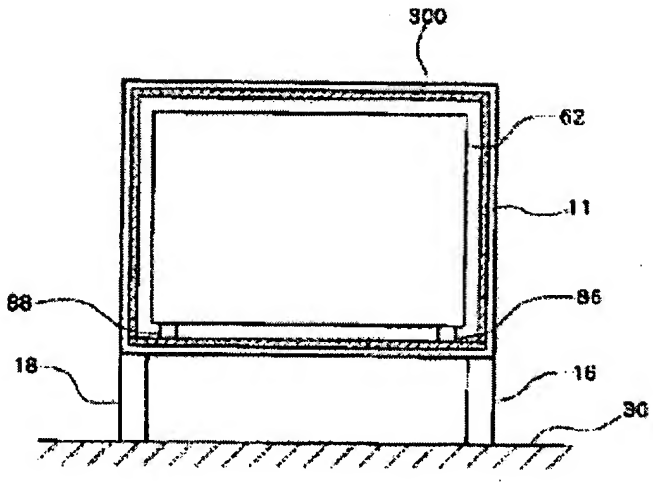
- European:

Application number: JP20010175511 20010611

Priority number(s): JP20010175511 20010611

Abstract of **JP2002367652**

PROBLEM TO BE SOLVED: To secure an insulation of a fuel cell housing case housing a fuel cell when a condensation is generated inside the fuel cell housing. SOLUTION: A fuel cell housing case skeleton 11 as a skeleton of the fuel cell housing case 10 is made of metallic material, and by coating the inner surface of the fuel cell housing case skeleton 11 with a material with insulation property, the insulation between the fuel cell housing case skeleton 11 and an end plate 62 is secured.



* NOTICES *

CLAIMS

[Claim(s)]
[Claim 1] The fuel cell hold case which is the inner surface of the case frame which is the fuel cell hold case where said fuel cell is held, holding the fuel cell with which the laminating of two or more unit cells was carried out by the attachment component, consisted of metal matter, and was insulated with said attachment component, and said case frame, and is characterized by having the insulating member which has the insulation which covers the predetermined field around said attachment component.
[Claim 2] In the internal base of said case frame which said fuel cell is located in predetermined height from the internal base of said case frame covered with said insulating member by the lower part, has the 1st flow section which has conductivity, and was covered with said insulating member The fuel cell hold case according to claim 1 characterized by having further the 2nd flow section which is located in a predetermined distance from said 1st flow section, is prepared in the field which has the height more than said predetermined height from a perimeter, and has conductivity.

[Translation done.]

* NOTICES *

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the fuel cell hold case where a fuel cell is held.
[0002]
[Description of the Prior Art] Researches and developments of the car equipped with the available fuel cell generation-of-electrical-energy system are furthered in the electrical and electric equipment generated in case current, hydrogen, and oxygen react. The laminating of many unit cells is usually carried out, and it consists of fuel cells used for a fuel cell generation-of-electrical-energy system. The fuel cell is held in the case made with metals, such as aluminum. The fuel cell is being supported and fixed by the supporter material prepared in the case base. It is necessary to insulate a fuel cell and a case, and the insulating material is prepared between supporter material, the fuel cell, or the case from a viewpoint of fault current prevention.
[0003] Moreover, when fault current should arise, as a preparation for suspending a system, by measuring the electric resistance between a fuel cell and a case etc., fault current has not arisen or the monitor is carried out.
[0004] Thus, a vehicle use fuel cell and its case are elaborated in order to cope with prevention or fault current in fault current.
[0005]
[Problem(s) to be Solved by the Invention] When the temperature within a case changes to low temperature suddenly from an elevated temperature, dew condensation may arise inside a case. In this case, a case, an insulating material, supporter material, and the dew condensation water produced on the front face of a fuel cell may have been connected. When dew condensation water was connected, the insulating condition of a fuel cell and a case was no longer maintained, and there was fear of fault current.
[0006] Moreover, in the conventional fault current detection, since the insulation of a fuel cell and a case was seen, even when the unit cell of a fuel cell shifted and liquids, such as cooling water, leaked, abnormalities were not detected until ** became [the fuel cell and the case] electrically actually.
[0007] Thus, the case for the conventional fuel cells was not enough as the cure to dew condensation water, and the cure to the liquid collected on the interior, and

the case for fuel cells where safety was more high was needed.
[0008] Then, this invention aims at offering the fuel cell hold case which can solve the above-mentioned technical problem.
[0009]
[Means for Solving the Problem] That is, holding the fuel cell with which the laminating of two or more unit cells was carried out by the attachment component, it is the fuel cell hold case where a fuel cell is held, and this invention consists of metal matter, it is the inner surface of the case frame insulated with the attachment component, and a case frame, and is equipped with the insulating member which has the insulation which covers the predetermined field around an attachment component.
[0010] Moreover, the fuel cell used by this invention is located in predetermined height from the internal base of the case frame covered with the insulating member by the lower part. It has the 1st flow section which has conductivity, and in the internal base of the case frame covered with the insulating member, a fuel cell hold case is located in a predetermined distance from the 1st flow section, and is prepared in the field which has the height more than predetermined height from a perimeter, and it has further the 2nd flow section which has conductivity.
[0011]
[Embodiment of the Invention] Hereafter, this invention is explained through the gestalt of implementation of invention.
[0012] Drawing 1 is the strabism schematic diagram of the fuel cell hold case 10 where the fuel cell 20 concerning 1 operation gestalt of this invention is held. The frame 11 (refer to drawing 2) of the fuel cell hold case 10 is formed with metals, such as aluminum, and is being fixed to the body 30 of a car by frames 12, 14, 16, and 18. The fuel cell 20 is held in this fuel cell hold case 10.
[0013] The fuel cell 20 is pinched with the end plates 60 and 62 which consist of a metal, resin, etc. from the both sides of the unit cell 40 by which carried out two or more laminatings of the unit cell 40 formed with two electrodes (an anode electrode and cathode electrode) which pinch the polyelectrolyte film (for example, ion exchange membrane of 100-micrometer thickness formed of fluororesin to 200 micrometer), and this polyelectrolyte film through the separator 50, and the laminating was carried out further.
[0014] The application-of-pressure device 70 for pressing down the unit cell 40 by which the laminating was carried out is installed in the end plate 60. The example of the application-of-pressure device 70 is a bolt which passes along the hole which penetrates an end plate 60, and the unit cell 40 by which the laminating was carried out is pressed down by tightening this bolt. In addition, you may have the same application-of-pressure device also as an end plate 62.
[0015] The cooling water hole, the fuel gas hole, and the oxidation gas eye are prepared (not shown), when the laminating of the unit cell is carried out, two or more unit cells 40 will be penetrated each hole, and the passage for the object for cooling water, the object for fuel gas, and oxidation gas is formed in the cross section of each unit cell 40.
[0016] Drawing 2 is the A-A' sectional view of the fuel cell hold case 10 where a fuel cell 20 is held. In this cross section, the fuel cell hold case frame 11 is being

fixed to the body 30 of a car through frames 16 and 18. The inner surface of the fuel cell hold case frame 11 is covered with the insulating member 300. As an ingredient of an insulating member 300, resin, such as polyethylene, urethane, and rubber, is suitable. Although the thickness of an insulating member 300 is based also on the insulation of an ingredient, in the case of polyethylene, 0.5mm - 1.0mm is suitable for it, for example. The end plate 62 of a fuel cell 20 is being fixed to the fuel cell hold case frame 11 by mountings 86 and 88 through the insulating member 300 in the both ends of end-plate 62 underside.

[0017] While the insulation with a fuel cell 20 and the fuel cell hold case frame 11 is secured, also when the temperature of the fuel cell hold case 10 interior changes from an elevated temperature to low temperature and dew condensation arises by this, it can prevent that a fuel cell 20 and the fuel cell hold case frame 11 are connected electrically.

[0018] In addition, in this operation gestalt, although the whole inner surface of the fuel cell hold case frame 11 is covered with the insulating member 300 For example, even if a part of inner surface upper part of the fuel cell hold case frame 11 is not covered with an insulating member 300 It can prevent that dew condensation water is connected between the part which the fuel cell hold case frame 11 exposed, the part which the fuel cell hold case frame 11 exposed substantially when distance with mounting 86 grade was secured enough, and mounting 86.

[0019] In addition, since it is the configuration same about the B-B' cross section of drawing 1 as an A-A' cross section, explanation is omitted.

[0020] Drawing 3 is drawing showing an example of the structure of mountings 86 and 88. The back plate 120 is being fixed to the fuel cell hold case frame 11 with the bolt 100 and the nut 110. Similarly, the back plate 122 is being fixed to the fuel cell hold case frame 11 with the bolt 102 and the nut 112. The inner surface of the fuel cell hold case frame 11 is covered with the insulating member 300. The coat by the insulating member 300 is given also about the part which the bolt 100,102 and the nut 110,112 exposed in the fuel cell hold case 10. An end plate 62 is fixed to a back plate 120,122 by tightening a bolt 104 through a seat 130. In addition, the special insulating member 302 is formed between the back plate 120,122 and the bolt 104, and the insulation with an end plate 62 and the fuel cell hold case frame 11 is secured. Hereafter, when calling it the fuel cell hold case 10, the fuel cell hold case frame 11 and an insulating member 300 shall be included.

[0021] Drawing 4 is the C-C' sectional view of the fuel cell hold case 10 where the fuel cell 20 shown in drawing 1 is held. The field where only h1 became high is prepared from the base (based on the front face of an insulating member 300) of the fuel cell hold case 10, and, as for the base center section of the fuel cell hold case 10, the flow section 500 is installed in this field. A part for the point of a bolt which has the flow which made the fuel cell hold case 10 penetrate from the exterior can be used for the flow section 500. Moreover, another flow section 510 is formed in the underside of a fuel cell 20 from the flow section 500 at predetermined distance detached building ******. A part for the point of this flow section 510 is installed in the height of h2 from the base of the fuel cell hold case 10. The relation of height h2 and h1 is h1 >=h2. The flow section 510 is connected

to the lead wire (not shown) covered with the insulating material. This lead wire is led to the exterior of the fuel cell hold case 10.

[0022] carrying out the monitor of the electric resistance in the meantime, since between the flow section 500 and the flow sections 510 is connected electrically, if the depth of liquids, such as cooling water collected on the interior of the fuel cell hold case 10 which carried out the liquid spill, becomes more than h1 by the above configuration -- the interior of the fuel cell hold case 10 -- a liquid -- specified quantity ******** -- things are detectable. Furthermore, when a liquid is detected, safety can be secured by suspending actuation of a fuel cell 20 etc.

[0023] Drawing 5 is drawing showing the C-C' sectional view in the configuration of another fuel cell hold case 10. Since the basic configuration is the same as the configuration shown in drawing 4 , explanation is omitted. With this configuration, the flow section 510 is installed in the field to which only height h1 became high from the base of the fuel cell hold case 10. A part for the point of a bolt which has the flow which made the fuel cell hold case 10 penetrate from the exterior like the flow section 500 can be used for the flow section 510. The bolt containing this flow section 510 and the flow section 510 is insulated with the fuel cell hold case frame 11 by the insulating member 300,520. Detection of the liquid with which the interior of the fuel cell hold case 10 was covered also by this is possible.

[0024] Moreover, detection of the liquid with which the interior of the fuel cell hold case 10 was covered is possible also by forming the flow section 510 of drawing 4 besides the above-mentioned configuration, and the same flow section 500 in a fuel cell 20, insulating the flow section 500 and the flow section 510, and carrying out the monitor of the electric resistance of the flow section 500 and the flow section 510.

[0025]

[Effect of the Invention] Since fault current by the dew condensation which occurred in the fuel cell hold case 10 interior can be prevented and it can detect that the fuel cell hold case 10 interior was further covered with the liquid, according to this invention, the fuel cell hold case 10 where safety is more high is offered so that clearly from the above-mentioned explanation.

[Translation done.]

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TECHNICAL FIELD

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PRIOR ART

[Description of the Prior Art] Researches and developments of the car equipped with the available fuel cell generation-of-electrical-energy system are furthered in the electrical and electric equipment generated in case current, hydrogen, and oxygen react. The laminating of many unit cells is usually carried out, and it consists of fuel cells used for a fuel cell generation-of-electrical-energy system. The fuel cell is held in the case made with metals, such as aluminum. The fuel cell is being supported and fixed by the supporter material prepared in the case base. It is necessary to insulate a fuel cell and a case, and the insulating material is prepared between supporter material, the fuel cell, or the case from a viewpoint of fault current prevention.
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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] When the temperature within a case changes to low temperature suddenly from an elevated temperature, dew condensation may arise inside a case. In this case, a case, an insulating material, supporter material, and the dew condensation water produced on the front face of a fuel cell may have been connected. When dew condensation water was connected, the insulating condition of a fuel cell and a case was no longer maintained, and there was fear of fault current.
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MEANS

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the strabism schematic diagram of the fuel cell hold case 10 where the fuel cell 20 concerning 1 operation gestalt of this invention is held.
[Drawing 2] It is the A-A' sectional view of the fuel cell hold case 10 where a fuel cell 20 is held.
[Drawing 3] It is drawing showing an example of the structure of mountings 86 and 88.
[Drawing 4] It is the C-C' sectional view of the fuel cell hold case 10 where the fuel cell 20 shown in drawing 1 is held.
[Drawing 5] It is drawing showing the C-C' sectional view in the configuration of another fuel cell hold case 10.
[Description of Notations]
10 A fuel cell hold case, 11 A fuel cell hold case frame, 12, 14, 16, 18 A frame, 20 A fuel cell, 30 The body, 40 60 A unit cell, 50 separators, 62 An end plate, 70 An application-of-pressure device, 82, 84, 86, 88 Mounting, 100,102,104 A bolt, 120,122 A back plate, 130 A seat, 300,302,520 An insulating member, 500,510 Flow section.

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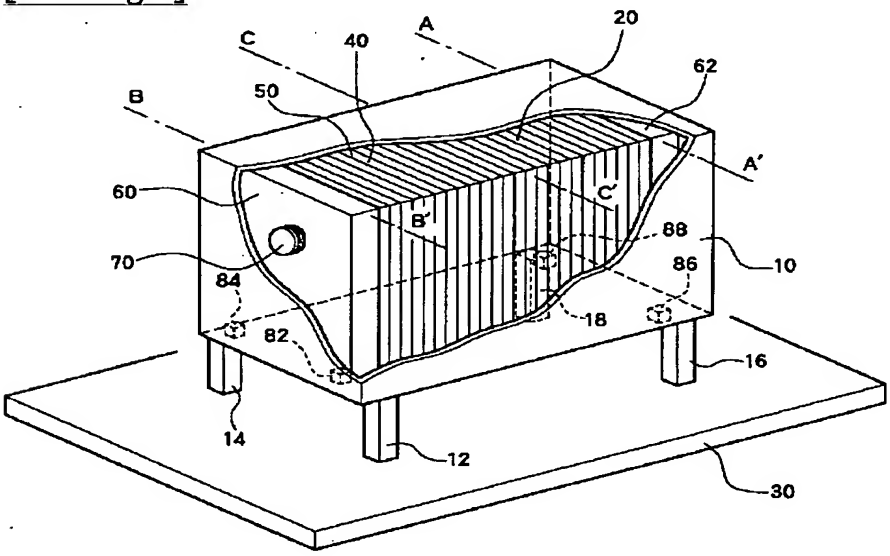
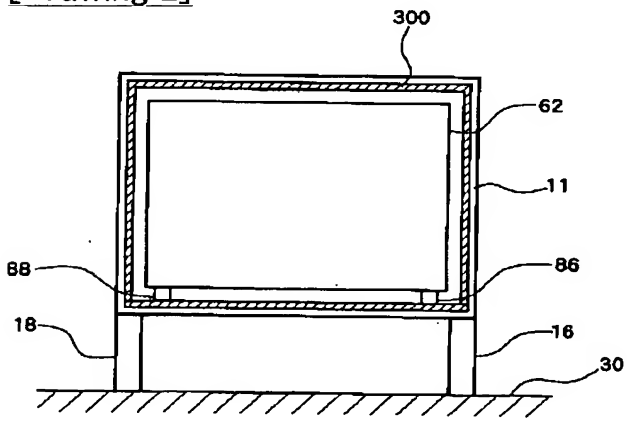
DRAWINGS

[Drawing 1]



[Drawing 2]



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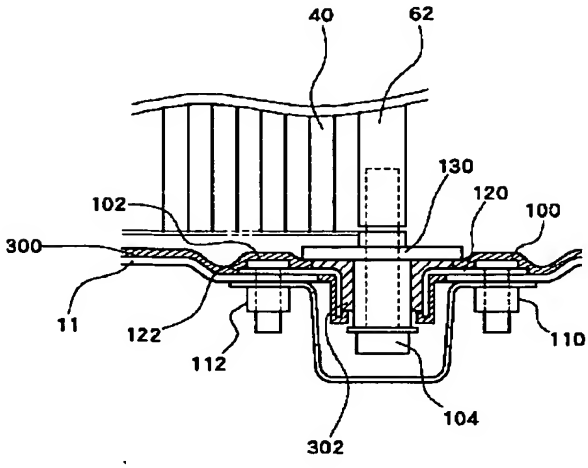

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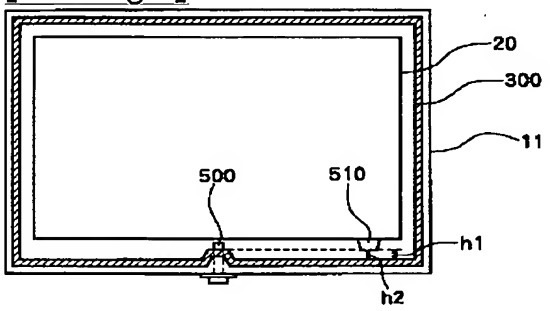

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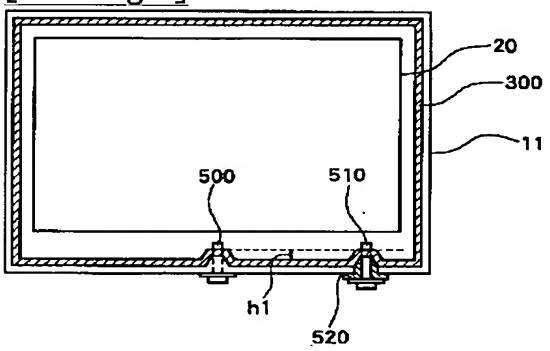

[Translation done.]

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（P2002－367652A）
(43)公開日　平成14年12月20日(2002.12.20)

(51)Int.Cl.⁷		識別記号	ＦＩ		テーマコード（参考）
Ｈ０１Ｍ	8/04		Ｈ０１Ｍ	8/04	Ｚ　５Ｈ０２６
	8/24			8/24	Ｚ　５Ｈ０２７
// Ｈ０１Ｍ	8/10			8/10	

審査請求　未請求　請求項の数２　ＯＬ　（全５頁）

(21)出願番号　特願2001－175511(P2001－175511)

(22)出願日　平成13年６月11日(2001.6.11)

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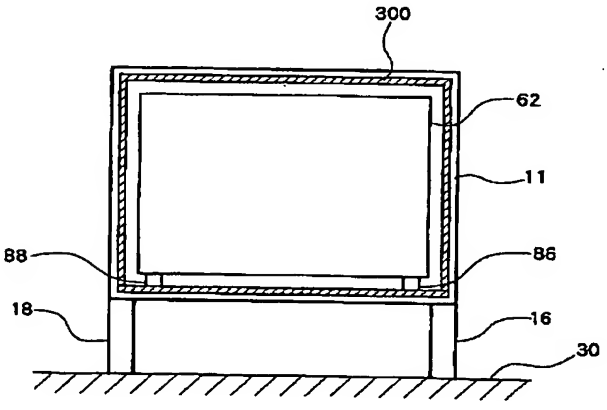
弁理士　吉田　研二　（外２名）

Ｆターム(参考)　5H026 AA06 CX10
5H027 AA06

(54)【発明の名称】　燃料電池収容ケース

(57)【要約】
【課題】　燃料電池を収容する燃料電池ケースは、従来、内部に結露が生じたときの対策が十分でなかった。
【解決手段】　燃料電池収容ケース１０の骨格となる燃料電池収容ケース骨格１１は、金属製の材料で構成し、その燃料電池収容ケース骨格１１の内面に、絶縁性の物質を被覆することにより、ケース内部に結露が生じた場合にも、燃料電池収容ケース骨格１１とエンドプレート６２との絶縁を確保する。



【特許請求の範囲】
【請求項１】　複数の単位電池が積層された燃料電池を保持部材で保持しつつ、前記燃料電池を収容する燃料電池収容ケースであって、
金属物質で構成され、前記保持部材と絶縁されたケース骨格と、
前記ケース骨格の内面であって、前記保持部材の周囲の所定の領域を被覆する絶縁性を有する絶縁部材と、
を備えることを特徴とする燃料電池収容ケース。
【請求項２】　前記燃料電池は、その下部に、前記絶縁部材で被覆された前記ケース骨格の内部底面から所定の高さに位置し、導電性を有する第１の導通部を有し、
前記絶縁部材で被覆された前記ケース骨格の内部底面において、前記第１の導通部から所定の距離に位置し、周囲より前記所定の高さ以上の高さを有する領域に設けられ、導電性を有する第２の導通部をさらに備えることを特徴とする請求項１に記載の燃料電池収容ケース。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、燃料電池を収容する燃料電池収容ケースに関する。
【０００２】
【従来の技術】現在、水素と酸素が反応する際に発生する電気を利用可能な燃料電池発電システムを備えた車両の研究開発が進められている。燃料電池発電システムに用いられる燃料電池では、通常、多数の単位電池を積層して構成されている。燃料電池は、Ａｌなどの金属でできたケースに収容されている。燃料電池は、ケース底面に設けられた支持部材によって支持、固定されている。漏電防止の観点から、燃料電池とケースとは絶縁する必要があり、支持部材と燃料電池またはケースとの間には、絶縁物質が設けられている。
【０００３】また、万が一漏電が生じた場合にシステムを停止するための備えとして、燃料電池とケースとの間の電気抵抗等を測定することにより漏電が生じていないか監視がされている。
【０００４】このように、車両用燃料電池とそのケースには、漏電を防止、または漏電に対処するため工夫が凝らされている。
【０００５】
【発明が解決しようとする課題】ケース内の温度が高温から低温に急に変わると、ケース内部に結露が生じることがある。この場合に、ケース、絶縁物質、支持部材、および燃料電池の表面に生じた結露水がつながった状態になることがある。結露水がつながることにより、燃料電池とケースとの絶縁状態が保たれなくなり、漏電の恐れがあった。
【０００６】また、従来の漏電検知では、燃料電池とケースとの絶縁性を見ているために、燃料電池の単位電池がずれることなどにより、冷却水などの液体が漏れた場合でも、実際に燃料電池とケースとが電気的につながるまでは異常が検知されないでいた。
【０００７】このように、従来の燃料電池用のケースでは、結露水への対策や、内部に溜まった液体への対策が十分でなく、より安全性の高い燃料電池用のケースが必要とされていた。
【０００８】そこで本発明は、上記の課題を解決することのできる燃料電池収容ケースを提供することを目的とする。
【０００９】
【課題を解決するための手段】即ち、本発明は、複数の単位電池が積層された燃料電池を保持部材で保持しつつ、燃料電池を収容する燃料電池収容ケースであって、金属物質で構成され、保持部材と絶縁されたケース骨格と、ケース骨格の内面であって、保持部材の周囲の所定の領域を被覆する絶縁性を有する絶縁部材と、を備える。
【００１０】また、本発明で使用される燃料電池は、その下部に、絶縁部材で被覆されたケース骨格の内部底面から所定の高さに位置し、導電性を有する第１の導通部を有し、燃料電池収容ケースは、絶縁部材で被覆されたケース骨格の内部底面において、第１の導通部から所定の距離に位置し、周囲より所定の高さ以上の高さを有する領域に設けられ、導電性を有する第２の導通部をさらに備える。
【００１１】
【発明の実施の形態】以下、発明の実施の形態を通じて本発明を説明する。
【００１２】図１は、本発明の一実施形態にかかる燃料電池２０を収容する燃料電池収容ケース１０の斜視概略図である。燃料電池収容ケース１０の骨格１１（図２参照）は、アルミニウムなどの金属で形成され、フレーム１２，１４，１６，および１８により、車両のボディ３０に固定されている。この燃料電池収容ケース１０には、燃料電池２０が収容されている。
【００１３】燃料電池２０は、高分子電解質膜（たとえば、フッ素系樹脂により形成された厚さ１００μｍ－２００μｍのイオン交換膜）とこの高分子電解質膜を挟持する２つの電極（アノード電極およびカソード電極）とで形成される単位電池４０を、セパレータ５０を介して複数積層し、さらに積層された単位電池４０の両側から、金属や樹脂などで構成されるエンドプレート６０、６２により挟持されている。
【００１４】エンドプレート６０には、積層された単位電池４０を押さえるための加圧機構７０が設置されている。加圧機構７０の例は、エンドプレート６０を貫通する孔を通るボルトであり、このボルトを締めることにより、積層された単位電池４０が押さえつけられる。なお、エンドプレート６２にも同様な加圧機構を備えてもよい。

【００１５】各単位電池４０の断面には、冷却水孔、燃料ガス孔、および酸化ガス孔が設けられており（図示せず）、それぞれの孔は、単位電池を積層したときに複数の単位電池４０を貫通した状態になり、冷却水用、燃料ガス用、および酸化ガス用の流路が形成される。

【００１６】図２は、燃料電池２０を収容する燃料電池収容ケース１０のＡ－Ａ’断面図である。この断面において、燃料電池収容ケース骨格１１は、車両のボディ３０にフレーム１６，１８を介して固定されている。燃料電池収容ケース骨格１１の内面は、絶縁部材３００で被覆されている。絶縁部材３００の材料としては、ポリエチレン、ウレタン、ゴムなどの樹脂が好適である。絶縁部材３００の厚みは、材料の絶縁性にもよるが、たとえば、ポリエチレンの場合には、０．５ｍｍ～１．０ｍｍが好適である。燃料電池２０のエンドプレート６２は、エンドプレート６２下面の両端部において、絶縁部材３００を介して、マウント８６，８８により燃料電池収容ケース骨格１１に固定されている。

【００１７】これにより、燃料電池２０と、燃料電池収容ケース骨格１１との絶縁が確保されると共に、燃料電池収容ケース１０内部の温度が高温から低温に変化した場合に、結露が生じた場合にも、燃料電池２０と、燃料電池収容ケース骨格１１とが電気的につながることを防止できる。

【００１８】なお、本実施形態においては、燃料電池収容ケース骨格１１の内面全体が絶縁部材３００で被覆されているが、たとえば、燃料電池収容ケース骨格１１の内面上部の一部が絶縁部材３００で被覆されていなくても、燃料電池収容ケース骨格１１が露出した部分と、マウント８６等との距離が十分確保されていれば、実質的に、燃料電池収容ケース骨格１１が露出した部分と、マウント８６との間で結露水がつながることを防止することができる。

【００１９】なお、図１のＢ－Ｂ’断面については、Ａ－Ａ’断面と同様な構成であるので、説明は省略する。

【００２０】図３は、マウント８６，８８の構造の一例を示す図である。燃料電池収容ケース骨格１１に、ボルト１００、ナット１１０により座板１２０が固定されている。同様に、燃料電池収容ケース骨格１１に、ボルト１０２、ナット１１２により座板１２２が固定されている。燃料電池収容ケース骨格１１の内面は、絶縁部材３００によって被覆されている。ボルト１００，１０２、ナット１１０，１１２が燃料電池収容ケース１０内に露出した部分についても絶縁部材３００による被覆が施されている。エンドプレート６２は、座台１３０を介して、ボルト１０４を締めることにより、座板１２０，１２２に固定される。なお、座板１２０，１２２とボルト１０４との間には、別途絶縁部材３０２が設けられており、エンドプレート６２と燃料電池収容ケース骨格１１との絶縁が確保されている。以下、燃料電池収容ケース１０というときは、燃料電池収容ケース骨格１１、および絶縁部材３００を含むものとする。

【００２１】図４は、図１に示した燃料電池２０を収容する燃料電池収容ケース１０のＣ－Ｃ’断面図である。燃料電池収容ケース１０の底面中央部は、燃料電池収容ケース１０の底面（絶縁部材３００の表面を基準とする）からｈ１だけ高くなった領域が設けられており、この領域に導通部５００が設置されている。導通部５００は、たとえば、外部から燃料電池収容ケース１０を貫通させた導通を有するボルトの先端部分を用いることができる。また、燃料電池２０の下面には、導通部５００から所定の距離離れた場所に別の導通部５１０が設けられている。この導通部５１０の先端部分は、燃料電池収容ケース１０の底面からｈ２の高さに設置される。高さｈ２とｈ１の関係は、ｈ１≧ｈ２である。導通部５１０は、絶縁物質で被覆された導線（図示せず）に接続されている。この導線は、燃料電池収容ケース１０の外部へ導かれる。

【００２２】以上の構成により、仮に、燃料電池収容ケース１０の内部に溜まった液漏れした冷却水等の液体の深さがｈ１以上になると、導通部５００と導通部５１０との間が電気的につながるので、この間の電気抵抗をモニタすることにより、燃料電池収容ケース１０の内部に液体が所定量溜まったことを検出することができる。さらに、液体が検出された場合には、燃料電池２０の動作を停止されることなどにより、安全性を確保することができる。

【００２３】図５は、別の燃料電池収容ケース１０の構成におけるＣ－Ｃ’断面図を示す図である。基本構成は、図４に示した構成と同様であるので説明を省略する。この構成では、導通部５１０は、燃料電池収容ケース１０の底面から高さｈ１だけ高くなった領域に設置されている。導通部５１０は、導通部５００と同様に、たとえば、外部から燃料電池収容ケース１０を貫通させた導通を有するボルトの先端部分を用いることができる。この導通部５１０および導通部５１０を含むボルトは、絶縁部材３００，５２０により燃料電池収容ケース骨格１１と絶縁されている。これによっても、燃料電池収容ケース１０の内部にたまった液体の検出が可能である。

【００２４】また、上記の構成のほか、図４の導通部５１０と同様な導通部５００を燃料電池２０に設け、導通部５００と導通部５１０とを絶縁させておき、導通部５００と導通部５１０との電気抵抗をモニタすることによっても、燃料電池収容ケース１０の内部にたまった液体の検出が可能である。

【００２５】

【発明の効果】上記説明から明らかなように、本発明によれば、燃料電池収容ケース１０内部に発生した結露による漏電を防ぎ、さらに、燃料電池収容ケース１０内部に液体が溜まったことを検出することができるので、よ

り安全性の高い燃料電池収容ケース１０が提供される。

【図面の簡単な説明】

【図１】　本発明の一実施形態にかかる燃料電池２０を収容する燃料電池収容ケース１０の斜視概略図である。

【図２】　燃料電池２０を収容する燃料電池収容ケース１０のＡ－Ａ’断面図である。

【図３】　マウント８６，８８の構造の一例を示す図である。

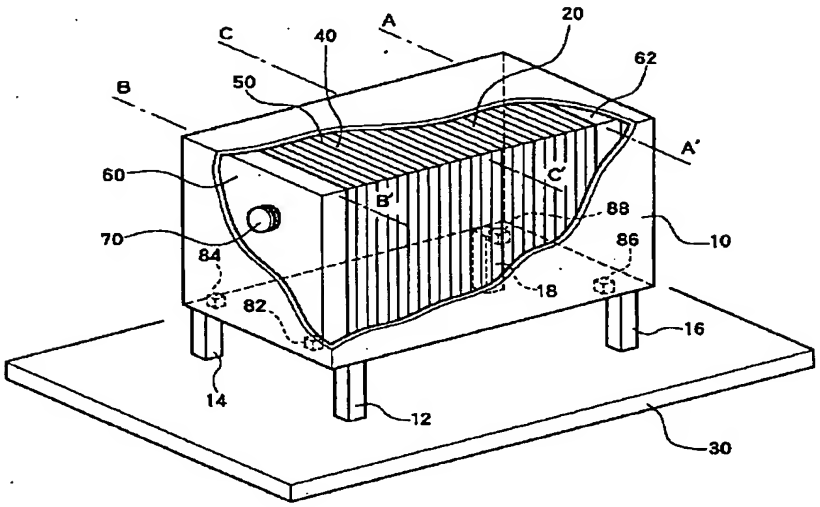
【図４】　図１に示した燃料電池２０を収容する燃料電池収容ケース１０のＣ－Ｃ’断面図である。

【図５】　別の燃料電池収容ケース１０の構成におけるＣ－Ｃ’断面図を示す図である。

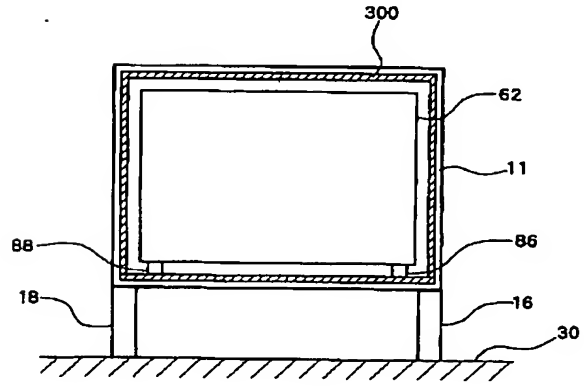
【符号の説明】

１０　燃料電池収容ケース、１１　燃料電池収容ケース骨格、１２，１４，１６，１８　フレーム、２０　燃料電池、３０　ボディ、４０　単位電池、５０セパレータ、６０、６２　エンドプレート、７０　加圧機構、８２，８４，８６，８８　マウント、１００，１０２，１０４　ボルト、１２０，１２２　座板、１３０　座台、３００，３０２，５２０　絶縁部材、５００，５１０　導通部。

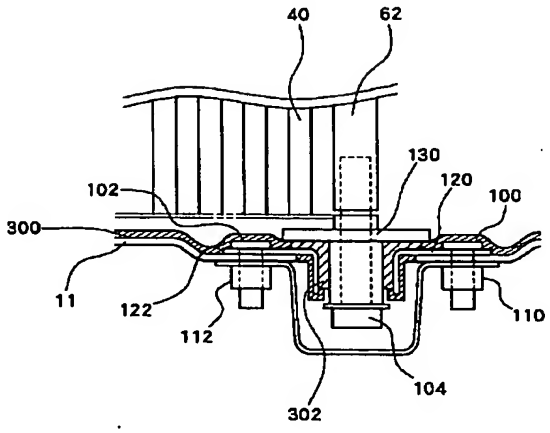
【図１】



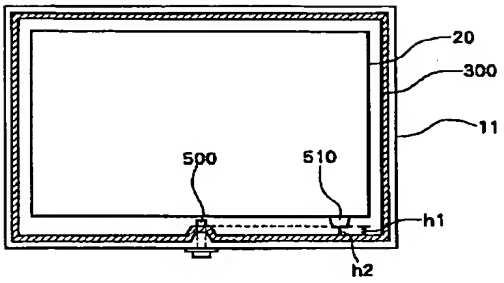
【図２】



【図３】



【図４】



【図５】